UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Introduction to Quantum Computing and Quantum Algorithms

2425-1-113R-06

Aims

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Understanding Quantum Computing Fundamentals: Provide students with a foundational understanding of the principles and concepts that underpin quantum computing, including qubits, superposition, entanglement, and quantum gates.
Exploring Quantum Algorithms: Introduce students to various quantum algorithms such as Grover's algorithm, Shor's algorithm, and quantum simulation algorithms. Students learn how these algorithms differ from classical algorithms and their potential applications.

Tentative contents

- Introduction to quantum technology
- Introduction to superconducting platform
- Basics of quantum information
- Fundamentals of quantum algorithms
- Quantum Machine Learning: implicit and explicit model
- Quantum Information and High energy physics: connecting the dots (theory and use case)
- Introduction to software for quantum computing
- From quantum algorithms to software package

Lecturers
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